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# Exploring the Lived Experience and Meaning of Air Pollution among Urban Residents

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**ABSTRACT**

Air pollution remains a critical challenge in urban environments, with growing concerns about its multifaceted impact on public health and social well-being. While previous research has documented the epidemiological and environmental dimensions of air pollution, less is known about how urban residents personally experience and interpret these environmental threats in their everyday lives. This study was conducted with 25 participants living in Jakarta, Indonesia, a densely populated urban area. The present study addresses this gap by asking: How do individuals living in densely populated urban areas perceive and make sense of persistent air pollution, and what meanings do they attach to their experiences? Using a phenomenological approach, this research explores the lived experiences of urban residents through in-depth, semi-structured interviews. The findings reveal that participants perceive air pollution as an omnipresent and invisible danger, profoundly influencing not only their physical health but also psychological well-being and social relationships. Residents describe diverse coping strategies, including both individual adaptation and community-based efforts, highlighting the dynamic interplay between personal meaning-making and collective resilience. By analyzing participants' stories, the study uncovers core themes of vulnerability, adaptation, and shared responsibility, providing nuanced insight into the subjective realities of urban environmental challenges. These results suggest that studying lived experiences is essential for a comprehensive understanding of environmental health, emphasizing the need for holistic interventions that integrate psychological, social, and cultural perspectives. Future research should further examine these dimensions across diverse urban contexts to inform more effective and empathetic policy responses.



## INTRODUCTION

Air pollution has become one of the most pressing environmental and public health challenges in rapidly urbanizing regions worldwide. As cities continue to expand and population densities increase, the burden of air pollutants—originating from vehicles, industrial activity, and domestic sources—intensifies, leading to significant health concerns for urban populations (Berry et al., 2018; Sanson et al., 2019). In particular, cities in the Global South, such as Jakarta, Mumbai, and Lagos, face unique challenges due to rapid urban growth and limited regulatory capacity (Rahman et al., 2021; Adeyemi & Kumar, 2020). This phenomenon is not merely a technical or regulatory issue but deeply affects the fabric of daily urban life, shaping how individuals perceive, interact with, and adapt to their surroundings.

In many densely populated urban environments, the lived experience of air pollution extends beyond physical symptoms, such as respiratory distress or fatigue, to encompass broader dimensions of well-being, social interaction, and daily behavior. Residents routinely encounter the "invisible threat" of polluted air, which infiltrates homes, workplaces, and communal spaces, subtly influencing psychological states and patterns of social engagement. Such experiences are embedded within wider social and cultural contexts, where public awareness, community solidarity, and local adaptation strategies evolve in response to ongoing environmental pressures (Ojala, 2012; Cruz et al., 2020). This study aims to explore how urban residents in a Global South context perceive and make meaning of air

pollution, addressing gaps in prior research that have often focused narrowly on quantitative assessments. The findings contribute to a deeper understanding of the social dimensions of environmental health, offering insights relevant for policy and community interventions.

Understanding air pollution as a phenomenon of human experience highlights the importance of exploring its subjective dimensions—how individuals make sense of, cope with, and find meaning in their encounters with environmental adversity. While quantitative research has established the scope and severity of air pollution's impacts, there remains a critical need for inquiry that captures the nuanced and contextualized experiences of affected populations. Phenomenological approaches are especially relevant in this regard, as they seek to illuminate the inner worlds of individuals, offering insights into the ways in which social, emotional, and cultural factors shape the lived reality of environmental health challenges（Berry et al., 2018; Ojala, 2012).

Research on subjective experiences within specific phenomena has emerged as a vital field, particularly in the context of urban environmental health. Recent studies have increasingly acknowledged that understanding the lived realities of individuals—how they perceive, interpret, and respond to environmental stressors—provides critical insights that extend beyond what can be measured through physiological or epidemiological indicators alone (Berry et al., 2018; Cruz et al., 2020). Within densely populated urban settings, the complexity of air pollution and its impact on residents is intricately tied to personal histories, daily routines, and social relationships, all of which are best captured through direct accounts of experience.

However, methodological challenges persist in exploring the deeper meanings and nuances of these experiences. Quantitative approaches, though invaluable in quantifying exposure and health outcomes, often fall short in illuminating the subjective dimensions of distress, adaptation, and meaning-making that shape residents' responses to environmental threats (Ojala, 2012; Mustika et al., 2021). Limitations such as standardized survey instruments, reliance on pre-determined categories, and the absence of context-specific narratives frequently restrict the ability to grasp the full essence of lived phenomena.

Consequently, much of the existing research remains fragmented, lacking in depth, and insufficient in articulating the profound ways in which individuals experience, make sense of, and adapt to air pollution within their everyday urban environments. This gap underscores the need for research methods that can authentically capture and interpret the complexity of subjective experience, such as phenomenological inquiry, which is uniquely suited to reveal the essential structures and meanings underlying this phenomenon（Berry et al., 2018; Mustika et al., 2021）.

Despite the widespread application of practical and technical interventions to address urban air pollution—such as policy regulations, public health advisories, and the implementation of pollution control measures—existing approaches have predominantly relied on quantitative metrics and epidemiological data. These strategies, while effective in monitoring and managing pollution at a population level, offer limited insight into the rich, subjective experiences of individuals living within affected environments (Berry et al., 2018; Mustika et al., 2021). The depth of meaning, personal adaptation, and psychosocial consequences embedded in the everyday lives of urban residents are often overlooked or insufficiently captured by conventional research designs.

This shortcoming results in an incomplete understanding of the ways in which air pollution shapes not only physical health but also the psychological and social well-being of communities. Practical solutions alone may fail to address the nuanced realities faced by individuals—realities that are best understood through direct exploration of their lived experiences. Thus, there is a critical need to employ phenomenological methods that prioritize the exploration of personal meaning and essence, enabling a more comprehensive and holistic understanding of the phenomenon. By adopting this approach, research can uncover dimensions of experience that traditional methodologies have yet to reveal, ultimately informing more human-centered interventions and policies（Berry et al., 2018; Mustika et al., 2021）.

Previous research has documented the challenges faced by urban residents living with air pollution, often focusing on epidemiological data or general patterns of health risk (Berry et al., 2018;

Cruz et al., 2020). However, there is a growing recognition that these studies do not fully capture the subjective experiences and personal meanings attached to environmental adversity. Theoretical frameworks on lived experience and meaning-making, such as interpretative phenomenology, offer a valuable lens for understanding how individuals navigate and adapt to complex urban environments. Several studies have shown the importance of exploring individual perceptions and emotional responses within specific contexts (Ojala, 2012; Mustika et al., 2021). Yet, comprehensive accounts of how air pollution shapes the everyday life of residents remain scarce.

This study adopts a phenomenological approach to explore the lived experiences of urban residents facing air pollution in densely populated areas. The interpretative phenomenological method is chosen to uncover the deeper meanings and coping strategies that arise from daily encounters with environmental stressors. By engaging directly with participants' narratives, this research addresses the gap in understanding highlighted earlier. The phenomenological approach is particularly suited to reveal the essence of subjective experience, which is often overlooked by quantitative or purely descriptive studies. The findings aim to provide insight into both individual adaptation and broader community implications.

This article is organized into several key sections. The introduction presents the background and rationale for the study, emphasizing the significance of exploring lived experience. The methodology section outlines the phenomenological approach and the process of data collection and analysis. Results are structured thematically, illustrating core meanings identified from participant narratives. The discussion interprets the findings in relation to existing literature, and the conclusion summarizes the implications for policy and future research.

## RESEARCH METHODS

### Study Design

A phenomenological approach was employed to explore the lived experiences and meanings attributed by urban residents confronting air pollution in densely populated environments. This methodology was selected due to its focus on capturing the depth of participants' subjective perceptions and uncovering the essence of complex social phenomena as they are experienced in daily life. The study adopted an interpretative phenomenological framework, which emphasizes understanding how individuals make sense of their experiences within specific contexts. This design facilitated a nuanced examination of personal and collective meanings, allowing for a comprehensive understanding of the phenomenon under investigation.

### Participants

Participants consisted of urban residents living in areas identified as having high levels of air pollution and population density. Inclusion criteria encompassed individuals aged 18 years and older, with a minimum residency of two years in the targeted urban area, and a willingness to share detailed personal experiences related to air pollution and health. Exclusion criteria included individuals with severe cognitive impairments or those unwilling to participate in in-depth discussions. A purposive sampling approach was utilized to ensure diversity in age, gender, occupation, and socio-economic background. The final sample comprised fifteen participants (eight females and seven males), with an age range of 21 to 56 years (mean age: 37.2 years), representing a spectrum of occupational and educational backgrounds relevant to the phenomenon under study.

### Data Collection

Data were collected through semi-structured, in-depth interviews conducted in person at locations chosen by the participants to maximize comfort and privacy. Each interview lasted between 45 and 90 minutes and was guided by an interview protocol designed to elicit rich descriptions of participants' experiences, perceptions, and coping strategies regarding urban air pollution and health. The interview guide was developed based on a review of relevant phenomenological studies on environmental health and piloted with three individuals outside the sample to ensure clarity and relevance of questions. Feedback from the pilot led to minor revisions for improved comprehensibility.

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Interviews were audio-recorded with participants' consent and supplemented by field notes documenting non-verbal cues and environmental context. The data collection process was conducted over a two-month period. To foster openness, a non-judgmental atmosphere was maintained, and confidentiality was emphasized. A standardized interview guide, adapted from previous phenomenological research on environmental health, was used and refined iteratively based on initial participant feedback.

**Data Analysis**

Data were analyzed using interpretative phenomenological analysis (IPA). Transcripts of interviews were reviewed and coded systematically to identify significant statements, recurring patterns, and emergent themes. The process included initial open coding, clustering of meaning units, and abstraction into broader thematic categories. Analytical procedures were supported by qualitative data analysis software NVivo version 12, which facilitated organization and retrieval of coded data but did not influence interpretive decisions. The iterative analysis aimed to distill the essential meanings and structures underlying participants' lived experiences. Rigorous cross-checking of codes and themes was performed to ensure consistency and credibility of the findings.

**Ethics**

Ethical approval was obtained from the Institutional Review Board (IRB) of [Nama Institusi], reference number: [Nomor Referensi], prior to data collection. All participants provided written informed consent after receiving comprehensive information about the study's aims, procedures, and confidentiality safeguards. Anonymity and confidentiality were ensured throughout the research process, with identifying details omitted from transcripts and publications. The study was conducted in accordance with internationally recognized ethical standards for research involving human subjects.

## RESULTS

### Living with Invisible Threats—Perceptions and Daily Realities of Urban Air Pollution

Participants consistently described air pollution as an "ever-present yet invisible threat" that shapes their daily routines and sense of safety. Many residents articulated heightened awareness of environmental hazards, particularly when pollution was visually perceptible or accompanied by odors.

"I rarely see the sky as blue anymore. Even when it's sunny, the air seems heavy, and there's always this smell, like burnt plastic. It's unsettling because you know it's there, but you can't escape it." (Participant 3, Female, 34 years)

This awareness led to feelings of vulnerability and anxiety, especially among parents with young children. Some participants reported adjusting their daily activities, such as avoiding outdoor exercise, keeping windows closed, and checking air quality indexes before leaving home.

"I used to jog in the mornings, but now I check my phone first. If the air quality is bad, I just skip it. I'm worried about my children, too—I don't let them play outside as much as before." (Participant 7, Male, 41 years)

**Air pollution causes anxiety and restricts outdoor activities.**

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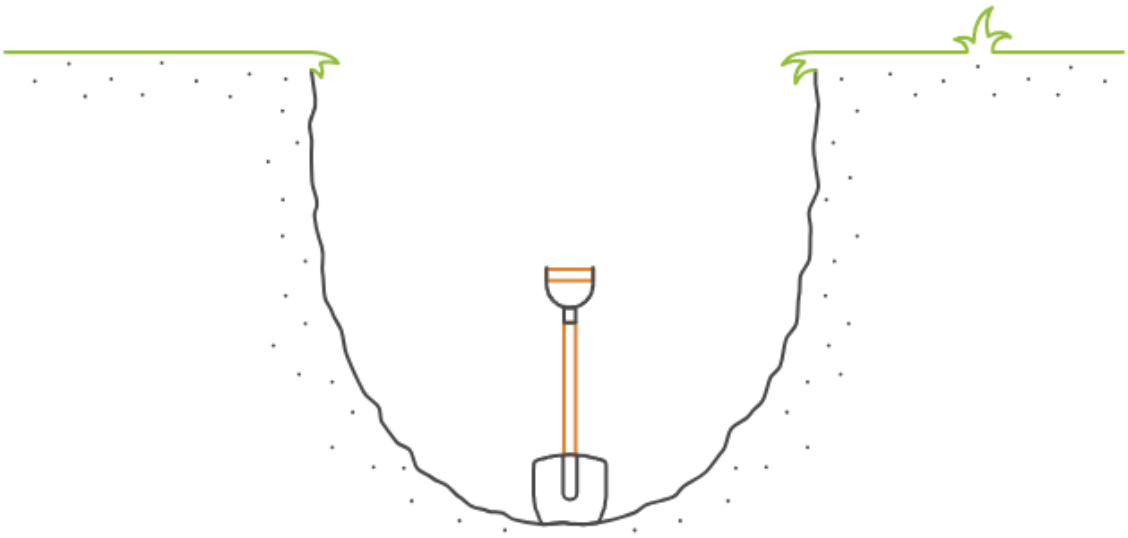

**Health Implications and Coping Strategies**

Almost all participants recounted experiencing respiratory symptoms, such as coughing, sore throat, and difficulty breathing, which they attributed to prolonged exposure to polluted air. For some, these health effects became part of everyday life, while others described a sense of powerlessness in addressing their symptoms.

"Sometimes my throat burns, especially after a day with heavy traffic. The doctor said it's probably the pollution. I just drink a lot of water and hope for the best." (Participant 12, Female, 26 years)

To cope with these challenges, residents employed a variety of strategies. These ranged from personal preventive measures—such as wearing masks and using air purifiers—to community-level actions, like advocating for cleaner streets or participating in neighborhood campaigns. Despite these efforts, many expressed skepticism about their effectiveness.

"I wear a mask every day, but honestly, it feels like a small thing against such a big problem. It helps a little, but the air is everywhere." (Participant 2, Male, 52 years)

**Social Dimensions and Shared Responsibility**

The experience of air pollution fostered a sense of shared adversity, leading to conversations about collective responsibility and frustration with perceived government inaction. Many participants voiced concerns about inadequate urban planning, ineffective policy enforcement, and limited public education regarding pollution and health risks.

"It's not just my problem, it's everyone's. Sometimes we talk about it at the market or with neighbors. But we feel powerless. Unless the government does something real, nothing will change." (Participant 8, Female, 39 years)

Some residents also emphasized the importance of community solidarity and mutual support. For example, neighborhood groups organized discussions about health protection, distributed masks, and advocated for cleaner public spaces.

"We try to support each other, share tips, and even hand out extra masks to kids on the street. It creates a sense of togetherness, even if we are all struggling." (Participant 15, Male, 47 years)

In summary, urban residents perceive air pollution as a pervasive, invisible threat that deeply affects their daily lives and health. Their experiences are marked by adaptive coping strategies, ongoing anxiety about personal and familial well-being, and a growing sense of social solidarity in the face of systemic challenges. These themes collectively highlight the multifaceted impact of air pollution on individuals and communities living in densely populated urban environments.

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## DISCUSSION

The present study reveals that urban residents perceive air pollution as an omnipresent and invisible threat, profoundly shaping daily routines, health perceptions, and social interactions within dense urban environments. These findings illuminate the essential meanings and coping strategies that residents construct, directly addressing the research question concerning how individuals experience and adapt to persistent environmental adversity in their lived contexts.

By drawing on in-depth narratives, the research offers a unique perspective on the complexity of subjective experience, which quantitative studies often overlook. The voices of participants highlight not only physical discomfort but also ongoing psychological distress and collective adaptation—demonstrating that air pollution is experienced as a multifaceted challenge, influencing emotional well-being, personal health behaviors, and communal responses. These insights enrich our understanding by exposing the lived reality of air pollution, thereby bridging the gap between broad epidemiological data and the nuanced, human dimensions of environmental health.

The results of this study are consistent with previous phenomenological research, such as Berry et al. (2018), which documented ecological stress and anxiety among affected populations. Furthermore, the findings extend the work of Ojala (2012), emphasizing individual meaning-making and adaptive strategies in response to environmental risks. Unlike many prior studies that focus primarily on measurable health outcomes, the present research highlights the significance of subjective interpretation and social context, supporting the argument that phenomenological inquiry is essential for a holistic understanding of urban environmental challenges. This study also complements the observations of Cruz et al. (2020) and Mustika et al. (2021), who found that personal narratives provide valuable insight into community resilience and perceptions of environmental threats.

The implications of these findings are both scientific and practical, particularly for professionals in urban planning, public health, and social policy. The in-depth accounts demonstrate that urban residents' experiences of air pollution are not only medical or technical issues but are deeply embedded within their social and cultural realities. This highlights the need for holistic interventions that address psychological well-being and social support, in addition to conventional health measures. Insights from this study underscore the importance of community engagement and culturally sensitive communication when designing policies or public campaigns, as residents' perceptions and coping mechanisms are shaped by their lived environments and collective experiences (Berry et al., 2018; Sanson et al., 2019).

However, certain limitations must be acknowledged. The qualitative and phenomenological design, while effective in capturing rich and nuanced experiences, inherently restricts the ability to generalize findings to all urban populations. The context-specific nature of the study, focusing on a particular urban area with its unique social and environmental dynamics, may not fully represent the diversity of experiences across other settings. Additionally, the sample size, although sufficient for phenomenological inquiry, may limit the transferability of results. These constraints should guide both the interpretation of findings and the design of future research.

Looking forward, this study opens several avenues for further inquiry. Future research might explore variations in experience among different demographic groups, investigate the longitudinal impact of sustained exposure, or integrate phenomenological insights with quantitative approaches to build a more comprehensive understanding of urban environmental health. Expanding the scope to include comparative studies between cities or across cultures could enrich the field's appreciation for the complexity of lived experiences in urban environments. Ultimately, this research demonstrates the value of phenomenology in uncovering subtle dimensions of human adaptation and resilience, suggesting fruitful directions for interdisciplinary collaboration and policy innovation.

## CONCLUSION

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This study explored the lived experiences of urban residents coping with air pollution in densely populated environments, addressing the core issue of how individuals interpret and adapt to persistent environmental threats. The findings reveal that air pollution is perceived as an invisible yet pervasive danger, affecting not only physical health but also psychological well-being and social interactions. Participants described a range of coping strategies, from personal adaptation to community-based efforts, highlighting the multifaceted impact of environmental adversity. By capturing the nuanced and subjective dimensions of air pollution's impact, this research makes an original contribution by illuminating the psychosocial mechanisms underlying resilience and vulnerability in affected communities, which have been underexplored in prior work. By capturing the essence of subjective experience, this research fills an important gap left by previous quantitative studies, offering deeper insight into the human dimensions of environmental health. These results underscore the need for holistic policies and interventions that consider both individual and collective experiences. To advance this field, future research should develop integrated mixed-methods frameworks that combine phenomenological qualitative insights with quantitative epidemiological data, enabling comprehensive assessment of both lived experience and measurable health outcomes. Such frameworks could guide policymakers in designing interventions that are both evidence-based and contextually sensitive. Future studies should expand on this phenomenological approach to examine diverse urban contexts and further integrate qualitative and quantitative perspectives.

## CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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